

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended): A partial oxidation reactor comprising:
 - an elongated jacket along an axis of any orientation,
 - means (12) for supplying a preheated gas that contains oxygen and optionally water vapor,
 - means (9) for supplying a hydrocarbon feedstock,
 - means (11) for evacuation of a hydrogen-rich effluent,
 - a first internal chamber (5) within said jacket for carrying out an essentially isothermal partial oxidation reaction, wherein said first internal chamber is connected to said means (9) for supplying hydrocarbon feedstock and to said means (12) for supplying preheated gas,
 - gas turbulizing means (13) within said first internal chamber (5), and
 - means (8) for linking said first chamber (5) to a second chamber (7), wherein said second chamber has a volume suitable for carrying out a piston flow, said linking means (8) comprising at least one orifice, and second chamber (7) indirectly exchanging heat over at least a portion of its length with said means (12) for supplying preheated gas, wherein said second chamber (7) is connected to said means (11) for evacuating hydrogen-rich effluent,

wherein said means (12) for supplying preheated gas comprises an annular chamber that is essentially coaxial with said jacket, and

said second chamber (7) is essentially coaxial with said jacket and comprises a first essentially adiabatic zone that is linked to linking means (8) and a second zone that exchanges heat with said means (12) for supplying preheated gas.

2. (Cancelled):

3. (Currently Amended): A reactor according to claim 1 2, wherein said first zone of second chamber (7) contains a vaporeforming catalyst.

4. (Previously Presented): A reactor according to claim 1, wherein said second chamber is made of a ceramic-type material or a metallic material that is optionally coated on the side of the hot fluid by a porous or non-porous ceramic material.

5. (Previously Presented): A reactor according to claim 1, wherein said gas turbulizing means inside said first chamber (5) is an internal gas recirculation ring, a baffle, or a separate injection device that is essentially in countercurrent to the feedstock, on the one hand, and the oxygen-containing gas, on the other hand.

6. (Currently Amended): A reactor according to claim 1 2, wherein said first chamber (5) and said second chamber (7) are essentially coaxial with said jacket, and said means (12) for supplying preheated gas comprises an annular chamber which surrounds first chamber (5) and said second chamber (7).

7. (Withdrawn): A process for the production of a hydrogen-rich effluent from a hydrocarbon feedstock, an alcohol, or an oil made from biomass, said process comprising reacting said treating feedstock, alcohol, or oil in a reactor according to claim 1.

8. (Cancelled):

9. (Cancelled):

10. (Cancelled):

11. (Cancelled):

12. (Cancelled):

13. (Cancelled):

14. (Cancelled):

15. (Cancelled):

16. (Cancelled):

17. (Currently Amended): A reactor according to claim ~~3~~ 2, wherein said gas turbulizing means inside said first chamber (5) is an internal gas recirculation ring, a baffle, or a separate injection device that is essentially in countercurrent to the feedstock, on the one hand, and the oxygen-containing gas, on the other hand.

18. (Currently Amended): A ~~reactor according to claim 5~~, partial oxidation reactor comprising:

- an elongated jacket along an axis of any orientation,
- means (12) for supplying a preheated gas that contains oxygen and optionally water vapor,
- means (9) for supplying a hydrocarbon feedstock,
- means (11) for evacuation of a hydrogen-rich effluent,
- a first internal chamber (5) within said jacket for carrying out an essentially isothermal partial oxidation reaction, wherein said first internal chamber is connected to said means (9) for supplying hydrocarbon feedstock and to said means (12) for supplying preheated gas,
- gas turbulizing means (13) within said first internal chamber (5), and
- means (8) for linking said first chamber (5) to a second chamber (7), wherein said second chamber has a volume suitable for carrying out a piston flow, said linking means (8) comprising at least one orifice, and second chamber (7) indirectly exchanging heat over at least a portion of its length with said means (12) for

supplying preheated gas, wherein said second chamber (7) is connected to said means
(11) for evacuating hydrogen-rich effluent,
wherein said means (12) for supplying preheated gas comprises an annular chamber that
is essentially coaxial with said jacket,
said second chamber (7) is essentially coaxial with said jacket,
said gas turbulizing means inside said first chamber (5) is an internal gas recirculation
ring, a baffle, or a separate injection device that is essentially in countercurrent to the feedstock,
on the one hand, and the oxygen-containing gas, on the other hand. and

wherein said first chamber (5) and said second chamber (7) are essentially coaxial with
said jacket, and said means (12) for supplying preheated gas comprises an annular chamber
which surrounds first chamber (5) and said second chamber (7).

19. (Currently Amended): A reactor according to claim ~~5~~ 17, wherein said first
chamber (5) and said second chamber (7) are essentially coaxial with said jacket, and said means
(12) for supplying preheated gas comprises an annular chamber which surrounds first chamber
(5) and said second chamber (7).

20. (Previously Presented): A reactor according to claim 1, wherein
said first chamber (5) has a hollow internal volume in which said gas turbulizing means is
positioned, and said first chamber (5) is thermally insulated by an adequate heat-insulated
thickness (6) positioned along the inside walls of said first chamber (5), and
said second chamber (7) comprises a first essentially adiabatic zone that is linked to

linking means (8) and a second zone that exchanges heat with said means (12) for supplying preheated gas.

21. (Previously Presented): A reactor according to claim 20, wherein said first zone of second chamber (7) contains a vaporeforming catalyst.

22. (Previously Presented): A reactor according to claim 1, wherein said first chamber has a hollow internal volume in which said gas turbulizing means is positioned, and said first chamber is thermally insulated by an adequate heat-insulated thickness positioned along the inside walls of said first chamber, and

said second chamber containing a third internal chamber (110) which forms an essentially annular reaction zone constituted by the space defined by the inside wall of said second chamber and the outside wall of said third chamber, and

said third chamber (110) being linked to said annular chamber of said means for supplying heated gas, and said third chamber (110) comprising a hollow cylinder (108) that is attached to wall (118) of said third chamber, said hollow cylinder defining a first volume (107) linked directly to input pipe (112) for delivering gas to be preheated, whereby gas to be preheated flows from said input pipe, through said hollow chamber, through said third chamber, and into said annular chamber of said means for supplying heated gas.

23. (Previously Presented): A reactor according to claim 22, wherein said annular reaction zone of said second chamber contains a vaporeforming catalyst.

24. (Currently Amended): A partial oxidation reactor comprising:

a first elongated chamber along an axis of any orientation comprising a first hydrocarbon input for delivering a hydrocarbon feedstock, and a second input for delivering oxygen containing gas,

a second chamber positioned within said first chamber, wherein said first chamber and said second chamber ~~form~~ form for a passage, which passage is connected to said second input for delivering oxygen containing gas,

said second chamber (3) having an input for introducing a mixture of ~~input for~~ ~~introducing~~ said hydrocarbon feedstock and said oxygen containing gas, and an output (11) for discharging partial oxidation reaction effluent, said input of said second chamber being in fluid communication with said passage and said ~~[[a]]~~ first hydrocarbon input,

said second chamber further comprising a first reaction chamber, a second reaction chamber, and a porous structure connecting said first reaction chamber and said second reaction chamber,

said first reaction chamber having a hollow internal volume (5) and a gas turbulizing apparatus comprising baffles within said hollow volume, said first reaction chamber being in fluid communication with said input of said second chamber, and

said second reaction chamber ~~being is~~ being positioned downstream from said first reaction chamber and separated from said first reaction chamber by said porous structure, said second reaction chamber being in fluid communication with said output of said second chamber,

wherein said passage comprises ~~is~~ an annular chamber, formed between ~~said that is~~

~~essentially coaxial with~~ said first chamber [,] and said second reaction chamber (7), and said annular chamber is essentially coaxial with said first chamber.

25. (New): A reactor according to claim 24, wherein said second reaction chamber comprises a first essentially adiabatic zone and a second zone that is in indirect heat exchange with said passage, wherein said first zone of said second reaction chamber contains a vapor-reforming catalyst.

26. (New): A process for the production of a hydrogen-rich effluent from a hydrocarbon feedstock, an alcohol, or an oil made from biomass, said process comprising reacting said treating feedstock, alcohol, or oil in a reactor according to claim 24.

27. (New): A partial oxidation reactor comprising:

- an elongated jacket along an axis of any orientation,
- means (12) for supplying a preheated gas that contains oxygen and optionally water vapor,
- means (9) for supplying a hydrocarbon feedstock,
- means (11) for evacuation of a hydrogen-rich effluent,
- a first internal chamber (5) within said jacket for carrying out an essentially isothermal partial oxidation reaction, wherein said first internal chamber is connected to said means (9) for supplying hydrocarbon feedstock and to said means (12) for supplying preheated gas,

- gas turbulizing means (13) within said first internal chamber (5), and
- means (8) for linking said first chamber (5) to a second chamber (7), wherein said second chamber has a volume suitable for carrying out a piston flow, said linking means (8) comprising at least one orifice, and second chamber (7) indirectly exchanging heat over at least a portion of its length with said means (12) for supplying preheated gas, wherein said second chamber (7) is connected to said means (11) for evacuating hydrogen-rich effluent,

wherein said means (12) for supplying preheated gas comprises an annular chamber that is essentially coaxial with said jacket, and

said second chamber (7) is essentially coaxial with said jacket.